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UNIVERSITY OF ALBERTA

folio

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U of A chemists unsung heroes in race to map human genome

Private company cracks genetic code with university-based technology

By Geoff McMaster

Drs. Norm Dovichi and Jianzhong Zhang have managed to avoid the international spotlight on their research for the most part. But truth be told, what will probably go down in history as the major scientific breakthrough of our age would not be possible without their innovation, at least not this early.

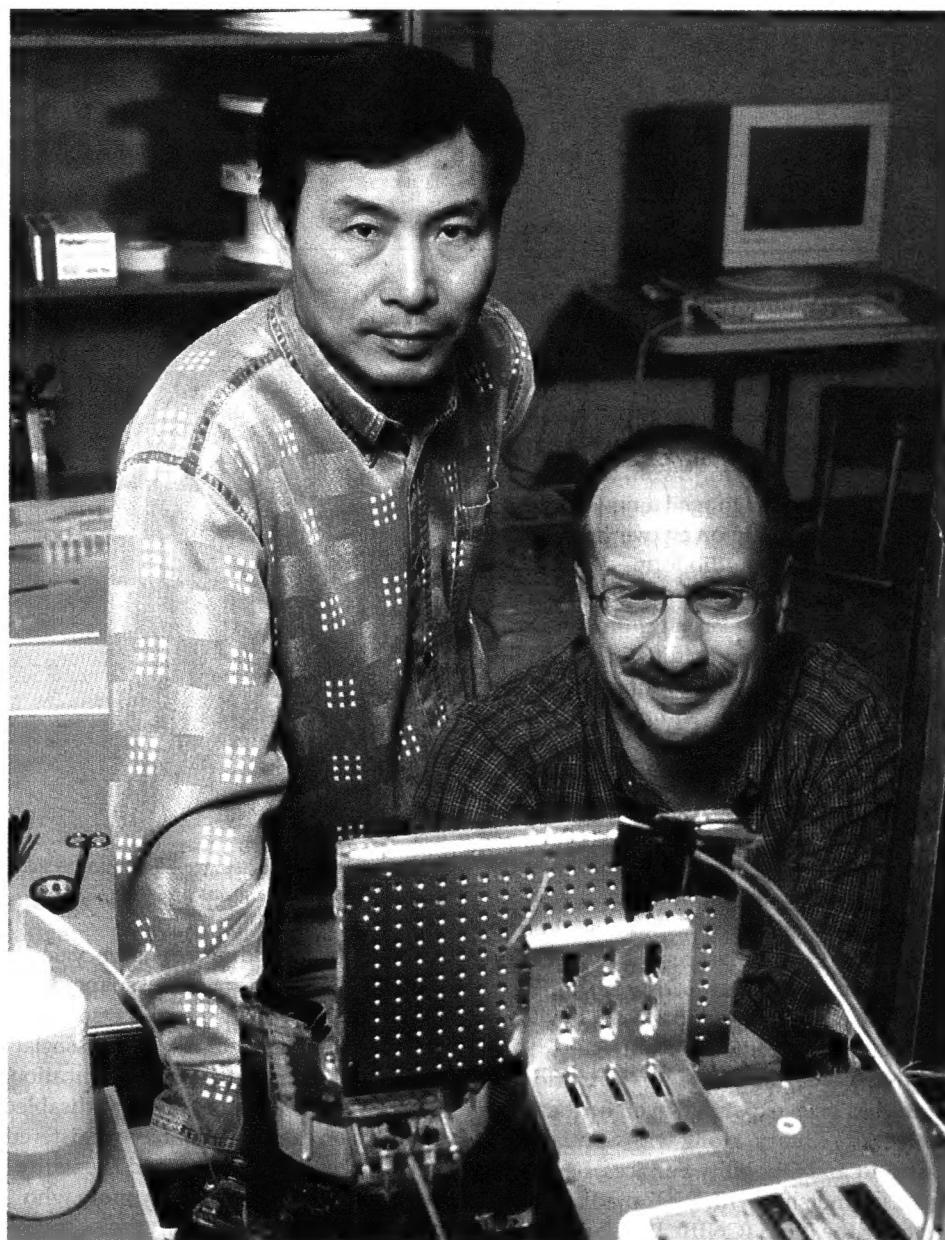
Last week an American company called Celera Genomics announced it had cracked the genetic code of a human volunteer and will need only three to six weeks to assemble the pieces into a complete blueprint. If successful, Celera will have beaten the publicly funded Human Genome Project in the race to decipher the human genetic code, consisting of roughly three billion chemical letters.

Missing from most of the widely circulated press accounts, however, is an explanation of the technology enabling Celera to leap ahead so quickly—a high-speed “model 3700” DNA sequencer capable of analyzing DNA 10 times faster than previous instruments. Running seven days a week, 24 hours a day, the sequence can now accomplish in less than three hours what used to take days, says Dovichi, and has accelerated by years the mapping of the human genome.

“[Celera] did something extraordinarily clever putting together a company with our instruments and with their own technology in sample preparation and computer data processing—it’s very impressive,” says Dovichi.

“With a relatively modest investment, they beat out the billion-dollar-a-year investment by the United States and British governments. I think that’s very cool.”

Although the sequencer was engineered and commercialized in 1998 by a company called P.E. Biosystems, and the first machines were shipped out early last year, the prototype was made nine



Drs. Jianzhong Zhang and Norm Dovichi: accelerating by several years the mapping of the human genome.

years ago by Dovichi and Zhang, then a doctoral student. Dovichi knew their discovery was huge, but its development didn’t go as planned and has ended up costing Dovichi, Zhang and the U of A

millions of dollars and immeasurable frustration. (See Dovichi’s, page 2.)

“We realized this had the potential to be extremely valuable. Unfortunately the university was unwilling to patent

Drs. Dovichi and Zhang got some high-profile recognition lately for their sequencer prototype. This year the two received the Award of Distinction by the Manning Innovation Awards Foundation of Calgary, worth \$25,000. And Dovichi was in Germany this week to pick up the Merck Prize in analytical chemistry for researchers under 45, an award worth 25,000 Deutsche marks (about \$18,000 Cdn.). This is the second time a U of A researcher has won the award since its inception eight years ago (Dr. Jed Harrison was the 1996 recipient).

» quick » facts

things at that stage and as a result wouldn’t patent [the sequencer].”

The two analytical chemists were also turned down for funding to develop their sequencer by both provincial and federal governments. While disappointed in what they call a “Canadian inability to think big,” Dovichi and Zhang say they harbour no resentment.

“You can’t do anything about it, so you have to go on and do something else,” says Zhang.

“There are people in Canada who have similar stories who are extremely bitter,” adds Dovichi, “and I see how that has poisoned their careers. I’m not going to let that happen.”

Dovichi is therefore quietly pursuing his next research project on cancer prognosis through protein analysis. Ironically he has once again been turned down by the Canadian government for funding and has once again had to look south of the border. But he says he’s learned his lesson: “This time we protected ourselves on the intellectual side.” ■

Dovichi's sequencer a lesson in lost opportunity

DNA mapping device was developed in pre-technology transfer days

By Geoff McMaster

While he's excited about the role his DNA sequencer has played in mapping the human genetic code, Dr. Norm Dovichi says the story of his machine's development is mostly "a sad one." He and colleague Jianzhong Zhang started working on the prototype in the late '80s, but were forced to keep quiet about it through most of the '90s while they struggled to secure funding and patents.

In the end the patent ended up with a U.S. company, P.E. Biosystems. It sold 1,000 of the sequencers last year at a cost of \$500,000 (Cdn.) each for total revenue of \$500 million. The U of A's cut could have been about \$1 million for 1999 alone, says Dr. Peter Robertson, director of the Industrial Liaison Office (ILO), but all it has seen is a modest \$128,000. Dovichi's invention was developed in the days before the U of A had an ILO and a licensing process to ensure university inventors received their fair share of royalties.

"We agree with Norm it's a technology way ahead of its time, and now 10 years later it's coming to market and is worth a significant amount of money," says Robertson. "The university in those days was not very knowledgeable [about tech-

nology transfer], and so we probably did not do things as well as we could have. But of course that's partly why the ILO office did get formed. It was recognized these sorts of things were happening, and the university and inventors were not getting as much as they could."

The arduous process of developing the "3700" was disappointing almost from the outset, says Dovichi, because no one wanted to fund it. Governments, both provincial and federal, simply weren't interested in a project they saw as destined for the trash heap.

In response to a proposal sent to the Natural Sciences and Engineering Research Council, for example, one reviewer argued since U.S. companies were probably doing similar research, there was no point in a Canadian university competing. The final sentence of the review: "\$750,000

is a lot of money to spend on a sure failure!"

Dovichi and Zhang were forced to approach the U.S. Department of Energy for support, and in exchange the American government acquired the patents.

The two researchers spent years trying to get them back and had a Toronto company ready to provide financial backing, but the delay cost them almost everything. Before Dovichi could file patents, a Japanese company he chooses not to name mysteriously filed their own patents based on the same technology.

"I know they heard me speak [at conferences]," he says. "I don't know if they figured out what we were doing, or found out through other means."

The two sets of patents existed concurrently for a time, he says, but because of

"\$750,000 is a lot of money to spend on a sure failure!"
—NSERC reviewer

complicated international trade agreements the Japanese ones carried more weight and covered the U.S., Japanese and German markets (the largest by far.) In the end they were sold to California-based P.E. Biosystems. They did the engineering on the machine and turned it into "an astonishing success story," says Dovichi.

Robertson stresses the purpose of the relatively recent ILO is not to make "huge sums of money" for the university. However it does entice researchers to work at the U of A, knowing they can benefit from the fruits of their inventions.

"In our best year two years ago—and we were the number one university that year—we made \$4.3 million... It's small peanuts as far as the university's overall budget is concerned, but it helps attract and retain leading researchers and more research dollars to the university." ■

U of A 10th in world computing contest

By Lucianna Ciccocioppo

University of Alberta computing science students placed a respectable 10th—ahead of the University of Toronto (15th) and Harvard University (22nd)—in the world finals of the mind-bender ACM (Association for Computing Machinery) International Collegiate Programming Contest.

The No. 1 team was St. Petersburg State University from Russia, with fellow Canucks from the University of Waterloo placing second.

This Top 10 position for the U of A is up one over last year's standing. It's not

the first time U of A students have landed in this range: in 1998 the team placed eighth and was third in 1984.

Sixty student teams were selected among 2,400 from around the world to participate in the finals in Orlando, Fla., recently. Winners are determined by the number of correct problems solved in the allotted time, with the least amount of penalty points. Problems range from basic geometrical programming to solving real-life problems.

This year's team included: Matthew McNaughton, Richard Krueger and Daniel

Robbins, with Jonathan Backer and Paul Shelley on reserve. Dr. Piotr Rudnicki was coach once again.

View these Web sites for more information on the yearly brain-twisting contest:

- <http://acm.baylor.edu/acmicpc/>
- www.cs.ualberta.ca/~piotr/

ProgContest / Read about the ACM contest online in Canadian Business:

- www.canadianbusiness.com/magazine_items/2000/apr17_00_orlando.shtml

Libraries' partnership with CNIB expands horizons for the print-disabled on campus

By Geoff McMaster

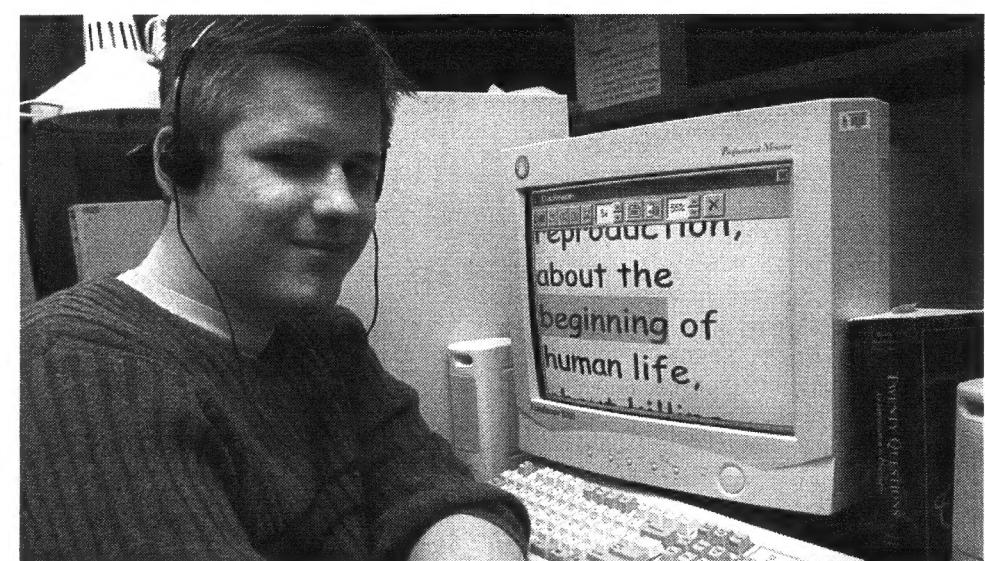
Matthew Breen takes pride in his academic accomplishments. Last term the first-year arts student received a string of sevens. He hopes to be a teacher some day.

There was a time, however, when a university education would have seemed almost out of reach for Breen. Legally blind, he isn't able to read a novel unless the text is blown up on an overhead screen or translated into audio form.

U of A Libraries do have the technology to transform to large print or audio most of the required reading in his studies. A machine called the "Reading Edge," for instance, can actually read printed text and convert it into voice.

"There is no way I can read normal books—the print is just way too small," says Breen. "For novels or text books, I just pop a disk into my computer and have the software program read it to me. It would be much, much harder without it." In his English 101 course last term, for instance, he scanned both the *Scarlet Letter* and *Not Wanted on the Voyage* and took in the literary classics by audiotape.

Now Breen's access into the world of print has been expanded even further. The university library, along with Specialized Support and Disability Services, has struck up a partnership with the Canadian Institute for the Blind (CNIB). It will allow U of A students and staff to tap into CNIB's VisuNet:Canada, a virtual library of materials designed for those who can't read standard print because of blindness, visual impairment, physical or learning disabilities. The institute has a whole catalogue of



First-year arts student Matthew Breen with the Reading Edge: VisuNet:Canada will help expand the world of print for visually impaired students and staff.

text on tape, including books, encyclopedias, academic journals, newspapers, magazines and other Internet resources.

According to Debra Dancik, associate director of the Herbert Coutts Education Library, there are about 50 print-disabled students on campus who have registered with Specialized Support and Disability Services and probably many more who have not registered.

"When we think of print disabilities, we think of people who are blind," she says. "But in fact a very small part of the population with print disabilities is actually blind—they have other problems; they're dyslexic or they have partial sight."

U of A Libraries are the first in the province to enter a partnership with CNIB which Dancik says will complement the Edmonton Public Library's collection for those who are print-disabled, and is available through the university's library network. Thanks to these advances in technology, the world of print is opening up to people who are visually impaired.

"Every little bit helps," says Breen. "And any help they give us is really appreciated."

Dancik says the university will continue seeking out other sites with "alternative format" materials for people with print disabilities. ■

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Blood sport

Is hockey becoming too violent?

By Phoebe Dey

No matter what National Hockey League enforcer Marty McSorley does from now on, he will likely always be remembered as the guy who knocked Vancouver Canucks tough-guy Donald Brashear unconscious after swinging his stick at Brashear's head.

Brashear lay twitching on the ice and spent several weeks recovering from a severe concussion. The NHL suspended McSorley for the rest of the season and he has since been charged with assault with a weapon. That event, along with other high-sticking incidents, has caused many observers of the game to question whether hockey is becoming more violent than ever and whether the league is doing enough to police the sport.

University of Alberta head coach Rob Daum thinks players today don't have the same respect for the game and each other as they did years ago.

"In hockey there were some unwritten rules and those included never hitting someone from behind or using the stick on someone," said Daum. "Now I don't think there is as much honour in athletes as in the past. Everything is changing and I hate to be a person who says 'When we played, it wasn't like this,' but it wasn't."

When someone goes over the line, particularly in the NHL, there isn't enough retribution on or off the ice to stop the culprit from striking again, said Daum.

"Before if someone went over the line, he'd have to fight and now in general there doesn't seem to be that accountability," he said. "I don't believe in fighting as a tactic but it's a much more honourable way to solve something than hitting somebody over the head. In the NHL fighting has dropped and the dirty incidents have increased. I don't think that's a coincidence."

So when did fighting become honourable? When ratings and dollar signs started skating on the same team, so to speak.

Dr. David Mills, a U of A history professor, said these violent occurrences go right back to the beginning of the NHL, but the difference today is millions of people watch the games and violent scenes are replayed repeatedly. The difficulty also lies with the NHL's desire to reach a bigger audience and bring in more dollars, said Mills.

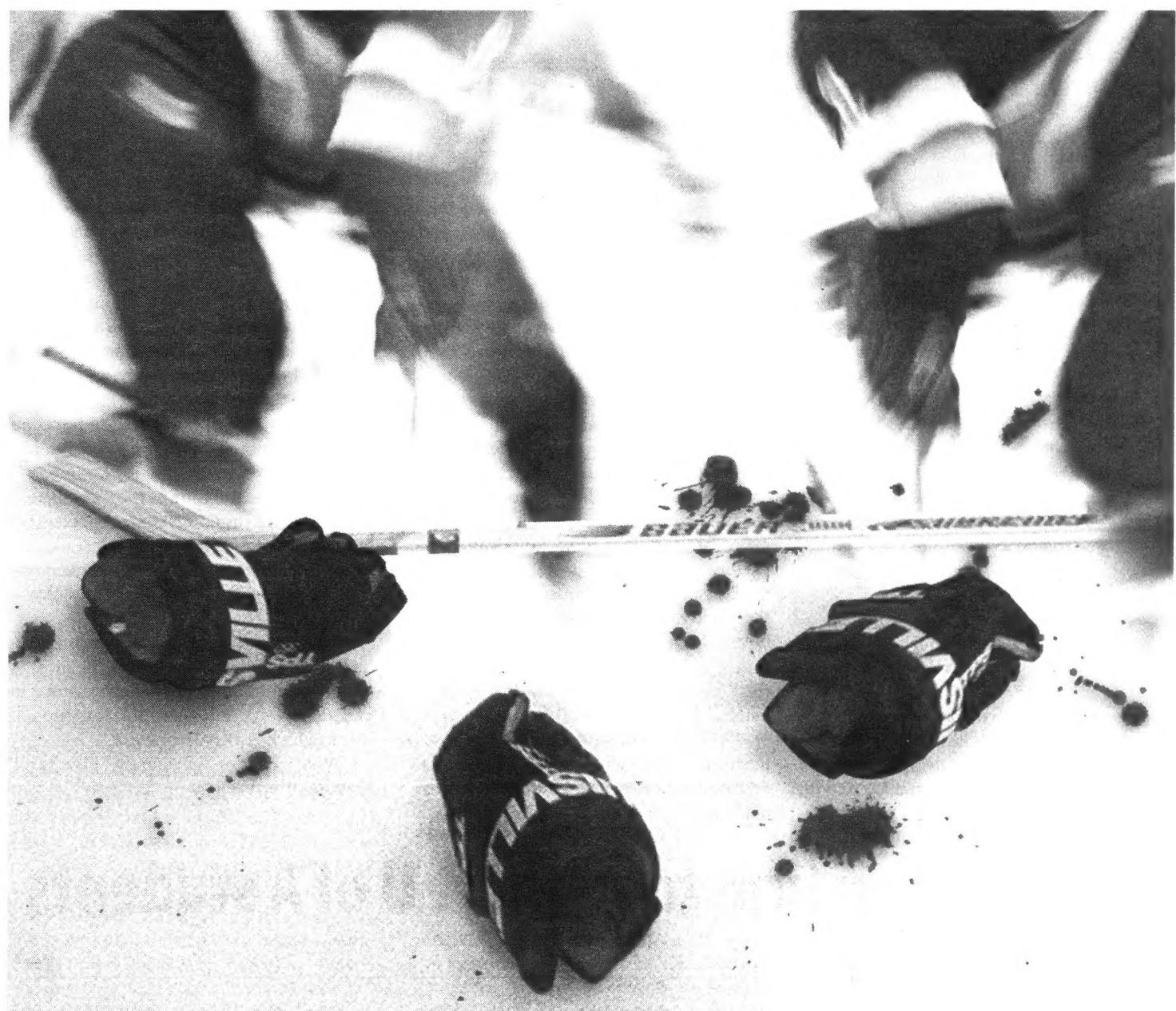
"The league is trying to expose its shaky American hold on its viewing audience and wants to encourage people to watch, which is why they encourage fights," said Mills. "The NHL is a big business and the only way this kind of stuff can be dealt with better is by much bigger fines."

Other leagues crack down immediately on athletes who step out of line, said Mills. If two football players fight, they are immediately ejected from the football game.

"And the biggest difference is, they don't have sticks in their hands. Today's hockey players also have such increased

I don't believe in fighting as a tactic but it's a much more honourable way to solve something than hitting somebody over the head.

—University of Alberta head coach Rob Daum



Recent violent incidents on the ice have caused observers of the game to question how to stop the attacks.

skills and now the game is played above the ice and not along the ice because shots are harder and higher."

Mills suggested one solution might be to set the initial fine at \$100,000 so it hits players where it hurts, said Mills. But, he adds, player relations have also changed so much that the union might not agree to any stiffer penalties.

If the frequency of these violent attacks is to decrease, changes must come from the players themselves, said Golden Bear forward and CIAU Player of the Year, Russ Hewson.

"Longer suspensions will tend to curb the violence but the [NHL] players' association has to look upon themselves or these things will continue," he said.

Although there is no justification for what McSorley did, Hewson thinks the whole event is unfortunate.

"Marty has skated with us and is a really nice guy which made this all the harder to see, because you know in his heart he's not the type to hurt people," said Hewson. "But there was absolutely no reason for him to do what he did. You can slash at pants, a stick or even hands to knock a guy off a puck, but to slash someone the way he did and in the spot he did serves absolutely no purpose."

In university hockey, a few players play dirty but overall there is a level of respect, perhaps because amateur athletes

aren't propelled by the almighty dollar, said Hewson.

"The respect is there because we are students and we play because we love the game. There's no money on the line for us, but at the NHL level, money guides the game. Guys are scared. If they don't finish a check or show they're 'mean' they might not be in the line-up or collect a paycheque."

That job as the team's enforcer is likely what pushed McSorley to do what he did, said Dr. John Dunn, a sports psychologist with the Bears hockey team.

"In no way do I condone his actions, but you have to recognize the role he plays within the team," he said.

Precipitating factors contributed to McSorley chasing down Brashear and bashing him over the head, added Dunn. Earlier in the game when the duo fought, McSorley lost and Brashear taunted him after the bout.

"His pride and ego were hurt and in many regards he wanted to prove a point that he could earn his paycheque," said Dunn. "His frustration kept building up during the game and I'm sure he was looking for other opportunities to fight and when he didn't get one and when there were only 30 seconds left in the game, he had to make his own opportunity."

It is more likely McSorley was trying to force Brashear to turn around and fight rather than knock him out, but he lost con-

trol for that split second and using the stick was the only way to get a reaction, said Dunn.

Whatever was going on in his head, McSorley will have a chance to defend his assault with a

One solution might be to set the initial fine at \$100,000 so it hits players where it hurts. But player relations have changed so much that the union might not agree to any stiffer penalties.

weapon charge when he appears for trial in Vancouver on Oct. 2. Although millions of people watched the incident on television, McSorley does have a defence, said Lewis Klar, dean of the Faculty of Law.

By engaging in a physical contact sport, every player consents to what might happen on the ice, said Klar.

"If any of that physical contact happened on the street, it would be wrong, both civilly and criminally," he said, adding intent will also likely play a key role in the trial. "There comes a certain point where contact exceeds that which is permitted. And when does it become so excessive that players didn't consent? The question is whether what McSorley did is outside the bounds, so we'll have to wait and see what happens."

U of A student elected secretary general of international model assembly

Organization of American States may adopt youth resolutions

By Geoff McMaster

Call him Secretary General David Hutchison. He may still be a student, and the organization he leads only a model, but he can still yield a degree of power on the political front—the power to make lives better in Latin American countries.

Hutchison, a master's student in political science, will lead the next Model Assembly of the Organization of American States (MOAS) in Argentina next year, after being elected by this year's assembly last week in Edmonton. Partly organized by the University of Alberta, it was the first time the MOAS convened outside of Washington, D.C. and marked the 10th anniversary of Canada's membership in the organization.

A total of 34 delegations of about 10 students each from South and Central America, the U.S. and Canada debated major issues facing the Americas—everything from human security to disaster relief—simulating the international policy-making process of the General Assembly of the Organization of American States. The resolutions they came up with will be forwarded to the OAS's June meeting in Windsor, Ont.

And make no mistake; the model assembly is not a game, nor a mock convention organized for mere kicks. In past years, says Hutchison, many of the student resolutions have actually been adopted by the OAS.

"I think [the current resolutions] have a good chance of being accepted," he says. "The youth can push the envelope where nation states may not be able to."

During the sessions, each delegation represented a country not their own and was forced to research issues and debate them from that country's perspective, says Hutchison. Canada represented Mexico this time around.



David Hutchison (left), seen here with students Vlad Gomez, Sangeet Dhaliwal and Anita Nicholson, will lead the next meeting of the MOAS in Argentina next year.

"Really, that's part of the learning exercise," he says. "You learn about the country and are forced to debate on its behalf. Whenever there was an issue particular to Mexico, such as migrant workers, I would get up and say something. I was representing the views of the Mexican government."

Hutchison also played a role in shaping the 13 general resolutions in the Declaration of the Young Inter-American Leaders endorsed at the end of the week.

One controversial resolution includes the reactivation of Cuba's membership in OAS. But the ones closest to his own heart urge "humanitarian co-operation to make the lives of the people of the Americas better," he says.

"They're making incredible progress in terms of democracy, and trade integration and trade liberalization, but where we

really have to co-operate is making lives better for those left behind." Examples are calls for more effective disaster relief, debt relief and recognition of human rights, including the rights of children.

"All these efforts are going to improve human security in our hemisphere," said Canada's secretary of state for Latin America David Kilgour in the closing address. He also urged delegates to remember friends and alliances made last week when things get tough in their home countries, and to turn to them for help in the future.

When the dust settles, Hutchison says he'll remember the friendships the most. "There's a lot of high-level debate and a lot of serious work, but also a lot of friendships, which is very important."

What's next on the agenda? "We're all sleeping this week." ■

National law firm to support U of A students

By Geoff McMaster

The Faculty of Law will have a new breed of scholar in its hallowed halls next year—the Blake Scholar. One of the largest law firms in the country, Blake, Cassels

and Graydon LLP, has donated \$75,000 to the U of A for scholarships worth up to \$5,000 each. It's part of a national, \$1 million, five-year program to support about 19 law students annually at 13 universities across Canada.

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"It's a very leading-edge program for law firms," said Dean Lewis Klar. This is the only national law firm scholarship that I know of."

Klar says the Blake is also one of the largest scholarships in the law faculty. The one or two awards each year will be given after a student has completed first year and will be based on academic achievement, community involvement, extra-curricular activities and personal accomplishments. It is renewable once after second year if the student maintains his or her academic standing in the Top 10 per cent of the class, making the value of financial assistance worth up to \$10,000 for each recipient.

"It's a significant gift, and the hope is that it will be endowed so that it would continue in perpetuity," says Klar.

In addition to the scholarship money, Blake, Cassels and Graydon has also donated \$25,000 to the law faculty for general use.

"This is really an investment in the future of our legal profession and society," says Mary Jackson, Blake's director of legal personnel. "It's our responsibility as a law firm to give back to communities across the country by ensuring the most talented and exceptional students have a full opportunity to eventually contribute to our legal system." ■

Canadian universities need \$3.6B in repairs: report

By Lucianna Ciccocioppo

A report indicating campuses across Canada face at least \$3.6 billion in deferred repairs and maintenance finally raises the issue of infrastructure reinvestment to a national level, says U of A's vice-president (finance and administration).

"It's an important issue for all institutions," says Glenn Harris. "There's a tendency to see the problem localized to each university."

The report, produced by the Canadian Association of University Business Officers (CAUBO) and the Association of Universities and Colleges of Canada (AUCC), surveyed 51 universities. Out of the \$3.6 billion total, the report concludes \$1 billion is urgently needed to reduce further deterioration and costs.

The report cites aging buildings, decreasing funding levels, growing demands for new space and a lack of profile on facility maintenance as some of the factors contributing to the urgency.

The University of Alberta currently needs about \$60 million in repairs and maintenance. The problem, says Harris, is finding the right balance between funding the academic side and the infrastructure side of universities, during a time of fewer resources.

"We have to be creative and we have to be bold. But we also have an enormous amount of competing resources," says Harris.

Harris points to the dentistry-pharmacy building as a good example of the type of challenge facing facility upgrades on campus. Built in 1924, the building is about 350,000 square feet but only houses 1,100 rooms. Because students were predominantly male back then, there is a shortage of women's washrooms, as there are in other old buildings, as well as shortages of women's locker room space and accessible entrances. This is in addition to the other problems attributed to old buildings, such as plumbing and roofing.

While the building is safe, it needs about \$9 million in repairs. "But if we were to revamp the complete functionality of the building, it would require \$30-40 million, if not more," says Harris.

Harris says Alberta universities are in better shape than those in other provinces. "The Alberta government has stepped up to the plate in this issue with \$13 million in infrastructure renewal last year, plus some extra money was given out this year. It helps us enormously, but it's not enough. The renewal challenges are huge," says Harris.

The report calls for "an infusion of short-term catch-up funds to bring the situation into equilibrium" and suggests federal and provincial governments include universities as eligible funding partners in the recently announced national infrastructure program. In addition, the report urged for long-term increases in base-operational funding to confront the deferred maintenance issue. ■

Canadian university enrolment inching upwards as more women sign up

By Lucianna Ciccocioppo

Enrolment in undergraduate courses at Canadian universities increased marginally during the 1998-99 academic year, stemming five consecutive years of decline, according to Statistics Canada. And the majority of the increase was made up of women students.

Universities enrolled 707,600 undergraduate students (full- and part-time), up 0.4 per cent from the previous academic year. But this level was still 8.3 per cent lower than the record 771,300 in 1992-93.

Among full-time undergraduate stu-

dents, women aged 18 to 24 were the only group whose enrolment increased between 1992-93 and 1998-99—up 7.8 per cent to 240,700.

On the other hand, the enrolment for male full-time undergraduates aged 18 to 24 declined 3.5 per cent to about 182,000 over that same time. A slight increase of 0.4 per cent to 183,100 occurred in 1998-99.

In this age group, women represented 56.8 per cent of full-time undergraduate enrolment in 1998-99, up from 54.3 per cent in 1992-93.

For Alberta institutions, full-time enrolment was up 6.29 per cent or 53,300 between 1992-1998, and a whopping 13.02 per cent or 20,300 for part-time enrolment.

Stats Canada says the five-year decline in overall undergraduate enrolment was due entirely to a sharp drop in part-time undergraduates.

These developments occurred during a period in which tuition fees increased, partially offsetting declines in government funding for each full-time student. ■

Folio extra

Read "Study debunks myth of seniors' burden on health care" on the Web at: www.ualberta.ca/FOLIO/9900/03.31/feature.html

Finances not the only issue in the farm crisis

A solid business plan and adapting to change are key, says rural economist

By Dr. Mel Lerohl, Department of Rural Economy

Farm problems are hard to escape these days, even for the urbanized. As one issue goes away, another replaces it. About a year ago, pork prices bottomed and the issue was survival of the hog industry. As hog prices have climbed, the focus has shifted to grain prices. Protesting grain farmers staged a sit-in at the Saskatchewan legislature. Other farmers threatened hunger strikes, one farmer drove his combine harvester to Parliament Hill, and yet another has asked the United Nations to censure the Canadian government for its treatment of farmers. Farm problems show up elsewhere, too. The *New York Times* recently gave front-page coverage to the income woes of some US ranchers.

The farm financial crisis may be front and centre, but it isn't the only farm issue. Food production has grown using the tools of modern agriculture, new seeds, fertilizers, and pesticides. The biotechnical revolution in agriculture now underway is also expanding the ability to produce farm products. Farmers find the changes rapid, sometimes too rapid to deal with, and urbanites worry the safety and quality of the food supply is being compromised.

DID 'OLD MAC' HAVE IT THIS TOUGH?

Let's begin with the consumer issue. Those who mistrust new technology are increasingly able to choose an 'organic' product. But for farmers, the question keeps re-appearing. Is there a crisis on the land? Would farmers be better off if society could stop the process of change? The short answer is farms need to adjust to change but the changes in agriculture are part of a long-standing pattern. Indeed, there are exciting things happening in the food business, both on and off the farm.

First, how major is the farm crisis? Agriculture prices are cyclical, and grain farmers are now being reminded the bottom of a price cycle is less fun than the top. But there are risk-management tools available, and many farmers use them. Price fluctuations, however, are not driving people from the farm. The Farm Credit Corporation, a major agricultural lender, says farmland values in Canada increased in every semi-annual period since mid-1993. While we don't yet have data beyond mid-1999, the most recent values show in-

creases in all provinces except British Columbia and Saskatchewan. The decline in Saskatchewan was small (0.5 per cent), and followed 11 successive semi-annual increases. Many farmers also have diverse skills and abilities applicable to non-farming jobs. About half of a typical farmer's income is from off-farm sources.

At a national level, the agriculture scorecard is impressive. Farmers make up less than four per cent of the labour force, yet produce food for Canadians and for a growing export sector. Grain exports made it possible to open the west, but the livestock sector has also developed export markets for cattle, hogs and meat. The agrifood sector, essentially everything about farm products that isn't on the farm, now contributes as much to Canada's output as does the part of agriculture taking place on the farm. In 1995, new rules were set for international agricultural trade. These rules hold promise of better world-market access for Canadian farmers, who are by and large low-cost suppliers of farm and food products.

FEWER FARMERS, FEWER FARMS

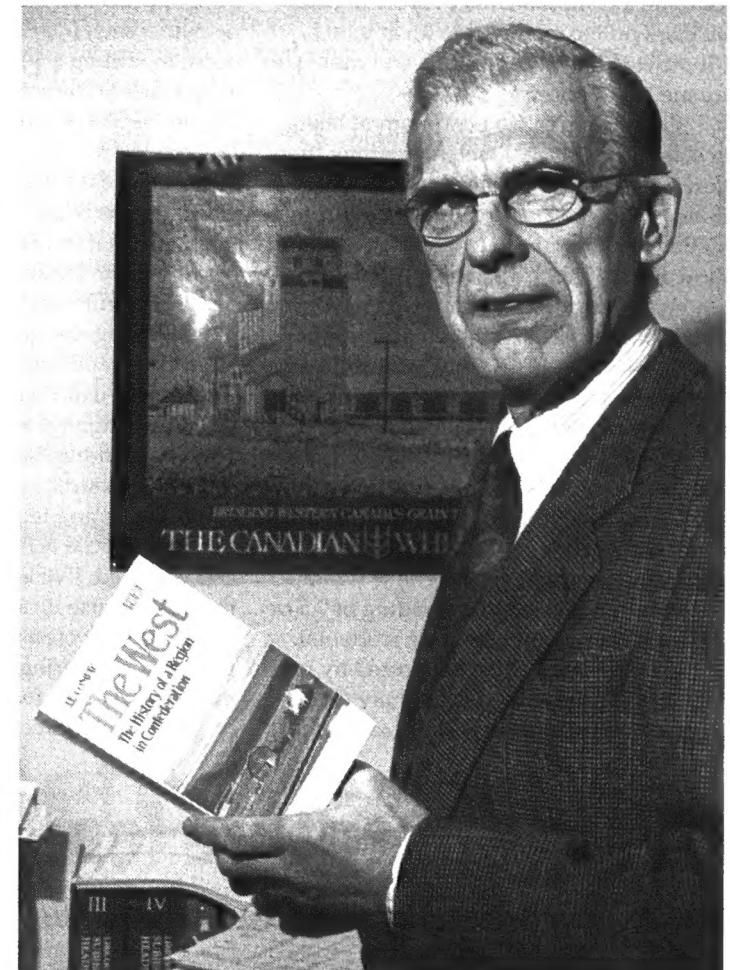
Efficiency gains on the farm have been impressive. Most of the children of farmers have shifted to urban jobs, yet farm output has increased. Those increases have come from larger, fewer, and more specialized farms. Decades ago, one economist (with tongue firmly in cheek) forecasted there would be one very large farm in Canada before the end of the 20th century. In fact, there were 277,000 farms in Canada in 1996, but that was down 42 per cent in just 35 years. Currently, the average farm in Canada covers a square mile, and in Saskatchewan the average farm is almost twice that size. Not all of these changes have come easily or painlessly. Farms have had to grow and adapt, and the farm that has not changed for even a decade or so is not likely providing a good income to its owners.

Is the family farm disappearing? Most farms are family operations, although many are organized as corporations for tax, management or succession reasons. Larger farms, corporate or not, permit farmers to employ their skills as managers or marketers, and to do so on a scale that

permits capturing the benefits of that specialization. Few university graduates return to or try to establish a farm operation that provides little prospect of a competitive income. Yet, skilled and educated people are arguably more important to the future of farming than to sectors of the economy. Expanding farms are capital-intensive and skill-intensive. Skills and a good business plan are as crucial to success in farming as for any mid-size business. Many analysts believe farming is shifting toward specialized farms producing for defined markets, and away from bulk production of commodities for a mass market. If so, skills and imagination of farmers will be especially crucial, as farms and agribusinesses re-engineer agriculture in what could be the most fundamental shift since the end of peasant farming.

RESHAPING THE FUTURE

With a future so challenging, why is there so much media focus on problems in agriculture? For starters, food security and farm incomes are public issues, and many worry low farm incomes will jeopardize the food supply. Farm cash receipts are up, however, rising 2.2 per cent in 1999 despite lower grain prices. Nor are farm incomes lower. The most recent income data from Statistics Canada are for 1997, but they show farm family incomes up four per cent, with increases from both off-farm and farm sources. Agriculture Canada forecasts beyond 1997 are for stable farm-family incomes,



Lerohl: looking at all the issues in the farm crisis.

with off-farm income growing slightly.

Another reason may be what has been called 'subsidy envy.' The 1995 world trade rules made it necessary for many countries to change the way they channel public money to farmers. Much of that support now comes in visible ways, usually directly from government. Canadian farmers see the largesse heaped upon European and some US farmers, and lobby for similar support, even though these subsidies are costly for taxpayers and for efficient exporters and damaging to the prospect of further trade liberalization. But lobby efforts for agricultural subsidies may have an even greater cost: creating an image that turns off those who would invest in the new agriculture, and turns away the talented people who would remodel agriculture. ■

folio letters to the editor

Kudos to guest writer

I am writing in response to Patrick Nugent's guest column ("Wrong use of notwithstanding clause") in the March 31 edition of *Folio*. In his fine article Mr. Nugent raises his grave concern (which I share) about the inclusion of automatically

invoking the notwithstanding clause as well as raising the question why Bill 202, the Marriage Amendment Act, was necessary and implies that it may be meaningless. It is clear to me that the bill is a mean-spirited attempt to target people like myself—gays and lesbians in Alberta. In this context the 'meaning' of the bill is quite clear—and spiteful.

Michael Phair
Councillor, Ward 4
City of Edmonton

The next edition of Folio is April 28, 2000. Letters can be forwarded to the Editor at lucianna.ciccocioppo@ualberta.ca by Thursday, April 20, 2000.

Why give away movie ending?

I enjoyed reading John Charles's response in the last issue to Anna Fodchuk's Oscar article—until the end.

Knowing of Mr. Charles's journalism experience and film background, I was a little surprised (read: stunned) that he gave away the twist ending to a movie that can owe much of its phenomenal success to the simple fact that *no one gave it away* in reviews or even by word of mouth.

What surprised me even more was that *Folio* decided to print it. Surely there must

have been a way to compromise without impinging on the one undeniable accomplishment of both *American Beauty* and *The Sixth Sense*—great marketing.

Respectfully,
Nicola Simpson
Administrative Director, Cultural
Industries Research Centre
Department of Marketing, Business
Economics and Law

Universiade '83 scholarship helps start a new career for arts graduate

By Geoff McMaster

Sarah Burghardt is bracing herself for some hard realities. As a talented actor about to graduate with a BA in drama, she knows her degree is hardly a ticket to Hollywood or even to steady work on the local stage.

She's taking the practical approach, planning a complementary career in show-business public relations. With any luck, it'll provide her with the time and money to pursue her passion.

"I'm not giving up my dream of being an actor," she says. "I feel, if anything, the work I'm going into will allow me to make money at something I really love, which is writing and communicating. But it will also allow me, if I'm a freelancer or working on contract, to audition for shows or whatever. I won't have to worry about paying the rent."

To ease the transition to her new career and to pay for some training, Burghardt has just won a Universiade '83 scholarship, worth \$3,000. She's one of 46 students (one of 15 from fine arts) to demonstrate exceptional performance in either athletics or fine arts in any year of their programs while maintaining an academic standing of 7.5 or better (80 per cent for entering students).

The scholarships are supported by profits from the 1983 World University Games in Edmonton. The program began in 1988-

89 and has since awarded 550 scholarships worth more than \$1.4 million.

"Aside from the money, the scholarship has been a real sign that my work's been valued," says Burghardt. "Everything I've done, the extra 20 hours a week I've put into extra-curricular activities, has been appreciated and acknowledged."

She's been in several student productions, including a 16th century period piece called *Fuente Ovejuna*, Judith Thompson's *Lion in the Street* and the premiere of *The Day Jim Henson Died*, written by fellow drama student Leah Bowen. She's also won the Arts Society Award for outstanding performer in theatre arts and is a member of Mirror Theatre, a troupe that dramatizes scenes of teen bullying, sexuality and other coming-of-age dilemmas in local junior high and high schools.

"We do it at their level," she says. "We use their language and use their issues. Then we conduct workshops with the students afterwards."

"I'm starting to realize more and more that I'm a social activist... As I've grown and matured, I've learned I like doing theatre because it can do something good."

Burghardt credits her scholarship application with bringing her aspirations more clearly into focus. Her days at the U of A may be numbered, she says, but the



Geoff McMaster

Sarah Burghardt is getting ready to take on the world with help from her Universiade '83 scholarship.

scholarship is no less crucial as she heads out into the workforce.

"You don't start out with much hope of making a lot of money, so the scholarships can be very helpful in getting people started." ■

Call to adventure leads psych grad to Ukraine

Internship involved designing teaching modules on Canadian health care and social welfare

By Geoff McMaster

Like many who have lived in one place for most of their lives, Jeffrey Stepnisky came down with an acute case of wanderlust when he finished his master's degree in psychology two years ago. After graduating from the U of A, he spent a year working in an Edmonton group home and teaching as a sessional lecturer here and in Canmore. But when that work dried up, he felt it was time to move on and see some of the world.

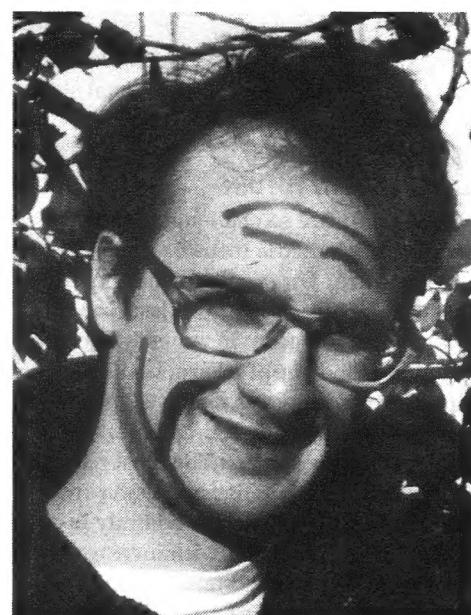
By chance he came across an ad on a psychology news server for an internship program in Ukraine. The Canadian Bureau for International Education was looking for recent graduates to send abroad and work in public administration, policy development, public relations and education. The program seemed to have little to do with Stepnisky's area of expertise, but his Ukrainian background was clearly a plus. His grandparents on both sides of the family are from the Eastern European country and he speaks a smattering of Ukrainian. So he figured he'd give it a shot.

"I had very broad interests when I was doing my master's degree and I thought I could transfer some of those skills," says Stepnisky. "Apparently they thought I could do it as well."

No doubt it probably helped that the program, funded by the Canadian International Development Agency, was new. The intention was to provide Canadian graduates with the experience they need these days to land attractive jobs, while helping out with development in Ukraine and strengthening ties between the two countries.

Because the administrators of the program themselves weren't sure what to expect, they cast a broad net. They liked Stepnisky's teaching background and his Ukrainian-language skills.

A short time later, Stepnisky and five other graduates from across Canada were



Red-faced Stepnisky: at a traditional Ukrainian wedding.

heading for Ukraine. He landed in Odessa, on the northern tip of the Black Sea, working at the Ukrainian Academy for Public Administration, a kind of training ground for civil servants. One of his jobs, as it turns out, was to explain how health care and social assistance programs are administered in Canada.

"Ukraine is undergoing all kinds of democratic and market transformations right now," he says. "They were looking for models, and teaching modules for their students. They're trying to create democratically and free-market minded civil servants to work in their government... The value of me being there was to provide a model of how things are done in Canada."

Stepnisky says the people were exceptionally eager to share information. He says he was also somewhat taken aback, given the legacy of communism and the

stereotypes that go with it, by their warm, carefree and welcoming nature.

"Especially when you get out of the workplace and are invited into people's homes, it quickly becomes a family event. You are showered with lots of food and liquor. I miss many of the friendships I made there."

Having returned from his six-month internship in February, Stepnisky says his travels

made a profound impression on him, especially since about halfway through the internship his girlfriend came to visit, and they were married in Prague.

Now he's living with his wife in Arlington, Va., where he's "feeling more culture shock than in Ukraine." She's taking courses in cultural studies while he looks for more internship opportunities in social research or international development (with an Eastern European focus) or possibly more graduate work. He just applied to one program at the Ukrainian embassy in Washington, D.C. Whatever he ends up doing, however, he's determined not to lose the Ukrainian connection.

"I hope to keep up some contact with Ukraine. I still have a strong passion for psychology, but the experience has also shifted me in the direction of sociology and political science, especially as it concerns change in the East."

Stepnisky is also quick to recommend the internship, or another like it, to anyone else hearing the call to adventure.

"There's lots out there. Once you start to learn about the right Web pages, there's lots of stuff to do." ■

Mining industry must examine its social impact

Eco-health panel looks at North/South issues

By Gilbert A. Bouchard

The social impact of mining and resource development comes in both big and little packages, an eco-health panel recently reported—all of which must be given serious consideration.

"There are all kinds of issues, ranging from environmental degradation to increased traffic on local roads to the cost of groceries," says Christine Cleghorn, executive director of the Yukon Conservation Society, a grassroots environmental organization based in Whitehorse.

Cleghorn was one of seven members of a special eco-health lecture series organized by Dr. Donna Mergler, academic fellow with the Ottawa-based International Development Research Centre, and presented by the University of Alberta's Environmental Research and Studies Centre. Looking at the North/South dialogue in the mining industry, the panel discussed the pressing need for a more ecological model for resource exploration and development.

"In Ross River, one elderly couple couldn't eat the salmon from the river—bush food they'd loved eating all their life—because they now react to it, and now face a five-mile trip for groceries," said Cleghorn. Her concerns echoed those of various members of the panel who called for a more holistic, cross-disciplinary approach to resource development addressing the full range of potential social, environmental and economic issues.

Featured speaker Beatrice Labonne, a senior adviser in technical cooperation to the United Nations Secretariat, said the mining industry faces myriad "serious challenges" in its operations all over the world.

In the south, large mining operations are ringed by locally operated (and often illegal) artesian mines, said Labonne, which are known to horribly exploit women and children. In the north, mining companies have to come to terms with orphaned (played out) sites—up to 16,000 sites in the western United States alone—that are "ticking time-bombs" of hazardous wastes.

"Spillages are the most common accidents in the sector and they take place everywhere," said Labonne. She argued companies must be sensitive to the needs of the broader community in the form of stakeholder dialogue and the critical role NGOs (non-governmental organizations, such as Cleghorn's Yukon Conservation Society) can play.

Mining sector representative Susan Mathieu, a member of Placer Dome's sustainable development team, said her Canadian company—one of the largest gold-mining companies in the world—has been working hard to "rise to the challenge of sustainability." The company was moved to action by a serious environmental accident at one of its mines in the Philippines, where mine tailings poured out into a river.

"Sometimes it takes an emotional event [like the accident in the Philippines] to change behaviour," she said.

Mathieu, currently coordinating the production of Placer Dome's annual sustainability report, said the mining industry needs to shift from an old fractured approach to a holistic process and move away from looking only "at the strict economic benefits." ■

laurels

AWA'S WOMAN OF THE YEAR

Adding yet another accolade to a long list, Dr. Juliet McMaster, Department of English, has been selected the Woman of the Year by the university's Academic Women's Association.

A University Professor (one of the highest titles the university bestows on faculty) and the first University Cup winner, McMaster is an internationally known scholar on the works of Jane Austen and 18th and 19th century writing. The historical and fictional position of women is a steady focus in her scholarship.

She has received numerous awards for her dedication to teaching and research, including the Killam Senior Research Fellowship, the Guggenheim Fellowship and the McCalla Professorship. She is the U of A's only Molson Prize winner, an award made jointly by the Canada Council and the Social Sciences and Humanities Research Council to one scholar per year.

She is a close mentor to her many graduate students, some 56 of whom have been women, and remains supportive of the careers of those who have graduated.

McMaster was the U of A's first PhD graduate in English. The AWA's Woman of the Year award recognizes contributions to the betterment of women in the university community.

CANADIAN WOMEN'S MENTOR AWARD

Dr. Mary Beth Bowen-Yacyshyn was honoured in Halifax recently as one of six winners in the second annual Canadian Women's Mentor Awards, standing out from among 800 other nominees.

A research associate on campus, Bowen-Yacyshyn won in the science and technology category. She specializes in inflammatory bowel diseases and works with her husband Dr. Bruce Yacyshyn, an associate professor of gastroenterology, developing and testing drugs for treating Crohn's disease and ulcerative colitis.

Bowen-Yacyshyn has gained a national reputation for mentoring young women and providing a role model for them. She was nominated by Dalhousie medical student Robyn Harrison of St. Albert, who spent two summers working with Bowen-Yacyshyn in her laboratory.

DISTINGUISHED AGROLOGISTS NAMED

Dr. Anne Naeth and two professors emeriti, Dr. Len Bauer and Dr. Alf Petersen, were given Distinguished Agrologist Awards.

These Faculty of Agriculture, Forestry and Home Economics professors were recognized by the Alberta Institute of Agrologists (AIA) for their contributions to the agriculture industry throughout their careers.

Naeth's research focuses on connecting and addressing environmental, agricultural and industrial issues. She is known for her innovative teaching practices, and encourages students to acquire a broad range of theoretical and applied knowledge.

Bauer was at the forefront in farm management for decades and was instrumental in linking sound accounting practices with useful farm management information in the 1970s.

Petersen spent his professional life improving agricultural and rural life and contributed to the farm management and agricultural economics profession in Canada.

ENGINEERING INSTITUTE NAMES FELLOW

Dr. Witold Krzymien, Department of Electrical and Computing Engineering, was elected a Fellow of the Engineering Institute of Canada (EIC). A TRLabs scientist, Krzymien's current research interests are in signal processing, multiple access and radio resource management problems in digital cellular wireless communication systems.

EIC Fellows are selected by their peers; 18 were chosen this year from a 30,000-membership base of societies under the EIC umbrella.

UNITED WAY RECOGNIZES U OF A

The University of Alberta landed three awards from the United Way in recognition of its community giving: the Spirit Award for Leadership (with 183 leadership donors); the Bronze Award of Distinction for employee by division (for achieving the highest percentage of potential donors in the education sector); and a Bronze Chairman's Award for the largest employee contribution (donations in excess of \$305,000). ■

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Farewell to the Chancellor



University of Alberta staff, students and alumni are invited to a special farewell to thank the Honourable Lois E Hole, CM Lieutenant Governor of Alberta Chancellor, University of Alberta for her wonderful contributions as Chancellor of the University of Alberta.

**Wednesday, May 10
2:00 - 4:00 pm
Coffee Party in Quad**

In case of inclement weather, the Farewell will be held in the Butterdome

talks

Submit talks and events to Brenda Briggs by 9 a.m. one week prior to publication. Fax 492-2997 or e-mail at public.affairs@ualberta.ca.

DEPARTMENT OF BIOCHEMISTRY

April 27, 3:00 pm

Dr. Steven Pelech, UBC, "Kineome analysis – Mapping protein kinase networks." Room 2-07 HMRC. Hosted by Dr. Larry Fliegel (492-1848).

DEPARTMENT OF BIOLOGICAL SCIENCES

Molecular Biology and Genetics Research Group (part of 605 seminar series)

April 14, 11:00 am

Evan Eichler, "Paralogous nature of the human genome: cause and consequence." Room M-149 Biological Sciences Building.

April 20, 4:00 pm

Alan Underhill, "Defining functional specificity for the transcription factor Pax3." Room G-116 Biological Sciences Building.

DEPARTMENT OF BIOMEDICAL ENGINEERING

April 19, 5:30 pm

Video conference seminar to U of Calgary: Christian Beaulieu, "Water diffusion in brain: how microscopic motions lead to an improved understanding of stroke." Room 231 CEB.

DEPARTMENT OF CHEMICAL AND MATERIALS ENGINEERING

May 4, 3:30 pm

Warren Baker, ScD (VP Research & Technology, AT Plastics Inc., Brampton, ON), "Process Modeling and Performance of Graft Modified Polymers Prepared in a TwinScrew Extruder." Room 344 Chemical and Materials Engineering Building.

DEPARTMENT OF ELECTRICAL AND COMPUTER ENGINEERING

April 26 to 28, 12:00 noon

Dr. Victor Basili, prominent software engineering scientist from University of Maryland, College Park will be visiting under the auspices of an iCORE ISPR (ICT Strategy Planning and Recruitment) grant, PI Dr. Witold Pedrycz, professor and director of the Computer Engineering Program, co-PI Dr. Petr Musilek, and Dr. Giancarlo Succi. Seminars will be broadcasted to the University of Calgary via video link. Info: 492-7228.

DEPARTMENT OF MEDICAL GENETICS**Medical Genetics Rounds**

April 19, 12:00 – 1:00 pm

Dr. Paul Flaman, St. Joseph's College, "Genetic testing-ethical issues and religious faith." Room 2-07 HMRC.

April 26, 12:00 – 1:00 pm

Dr. Fiona Bamforth, Lab Medicine and Pathology/Medical Genetics, "Primary hyperoxaluria." Room 2-07 HMRC.

DEPARTMENT OF PHILOSOPHY

April 14, 3:30 pm

Colloquium: Joseph Almog, University of California, Los Angeles, "What Language Does It Take to Describe Our Mind?" Room 4-29 Humanities.

DEPARTMENT OF PHYSICS

April 14, 3:15 pm

Colloquium: Guenter Albrecht-Buehler, PhD, Northwestern University Medical School, Chicago, IL, "Detection of near-infrared light pulses by mammalian cells. Are cells able to 'see'?" Room V-129.

DEPARTMENT OF PHYSIOLOGY

April 14, 3:30 pm

Peter A. Cattini, University of Manitoba, "FGF-2 in the Heart: No Pain, No Gain" and "PSF: A Tale of Two Tissues, Pituitary and Placenta." Room 2-07 HMRC.

April 20, 9:00 am

Miguel Martin-Caraballo, PhD thesis defense, "Getting Ready for Your First Breath: Functional Maturation of Phrenic Motoneurons and Diaphragm." Classroom F (24.02 WMC) – next to Faculty of Medicine and Dentistry offices.

JOHN DOSSETOR HEALTH ETHICS CENTRE**Health Ethics Seminar Series**

April 14, 12:00 – 1:00 pm

Barbara von Tigerstrom, Health Law Institute, "International Human Rights Law: Implications for Canadian Health Care and Research." Room 2-07 HMRC.

May 19, 12:00 – 1:00 pm

Dr. Wendy Austin, Faculty of Nursing, "Human Rights Approach to Health Ethics: Common Sense or an Illusion." Room 2-07 HMRC.

UNIVERSITY CUP CALL FOR NOMINATIONS

The Office of the Vice-President (Academic) and Provost is pleased to invite nominations for the University Cup 2000 competition. The University Cup is among the highest honours that the University of Alberta confers on its faculty members. It is awarded in recognition of faculty members who have clearly excelled in both teaching and research. These two activities are the primary responsibilities of faculty as set out in the Staff Agreement, and together they represent the heart of the University ideal, which is the creation and transmission of knowledge.

Any full-time member of the academic teaching staff with 20 years of service as a faculty member in a university community and at least 10 years of

service as a faculty member at the University of Alberta is eligible to receive the award.

Formal nominations, including supporting documents, may be submitted by current or past students, faculty members, Deans or Chairs to Doug Owram, Vice President (Academic) and Provost, Third Floor (3rd), University Hall, by June 1, 2000.

Nominators play a crucial role in ensuring that the candidates considered are the most accomplished members of the University and that the letters of support give appropriate testimony to nominees' achievements.

Detailed criteria for nominations may be obtained from the Office of Vice President (Academic) and Provost – 492-3290. ■

TEACHING UNIT AWARD CALL FOR NOMINATIONS

The Office of the Vice-President (Academic) and Provost is pleased to invite nominations for the University Teaching Unit Award. The intent of this award is to celebrate excellence in teaching when a group of individuals consistently work together to promote outstanding teaching and learning.

This award is to be given to a "teaching unit." The teaching unit must have been in existence for at least three years. The teaching unit may work at the graduate or undergraduate level and may include some or all members of a faculty, school, department or division, or it may be an interdisciplinary team. Students taught by such a teaching unit

must be able to identify that they were taught by a group of instructors and not a series of individuals. The teachers in the teaching unit must be able to define how they are a unit, describe their roles and how they function.

Formal nominations, including supporting documents, may be submitted by Deans, Chairs, and any staff member or student to Dr. Doug Owram, Vice President (Academic) and Provost, Third Floor (3rd), University Hall, by June 1, 2000.

Nominations are limited to 15 pages. Detailed criteria for nominations may be obtained from the Office of Vice President (Academic) and Provost – 492-3290. ■

events

FRIENDS OF UNIVERSITY HOSPITAL

The Friends present: Spring Market Place in the UAH atrium level.

Phase I: May 8 and 9, 9:00 am - 5:00 pm

Phase II: May 11 and 12, 9:00 am - 5:00 pm

Different vendors selling everything from fine pieces of art to comfortable clogs, clothing for tots and adults, craft items and much, much more! Proceeds enhance patient care and comfort at the UAH. Information: 407-8428.

GEOLOGICAL HERITAGE OF ALBERTA

April 26, 7:00 pm, Faculty Club

The Department of Earth and Atmospheric Sciences cordially invites you to "A Tribute to the Geology Emeritus Professors, University of Alberta," presented by the class of EAS 530 and the Ichnology and Hydrogeology Research Groups. A series of posters compiled by the graduate students will be unveiled. Cost: \$12/person (\$8/student), includes light refreshments. Please RSVP to 492-2044 by April 15, 2000.

ANNUAL GENERAL MEETINGS

CANADIAN FEDERATION OF UNIVERSITY WOMEN

The monthly meeting of the CFUW will be held April 17, 7:30 pm, at the Faculty Club, 11435 Saskatchewan Drive. This meeting is the Resolutions Night and Annual General Meeting. All women university graduates are welcome to attend. Information: 439-4285.

FACULTY WOMEN'S CLUB

April 26, 6:00 pm

The Faculty Women's Club is hosting its Annual General Meeting and Medieval Feast at the Celtic Hall, 99 Street and 32 Avenue (next to the Golfdome). Cost: \$25/person. Information: Jeanette 488-6212.

CONFERENCE

CANADIAN SOCIETY FOR PHARMACEUTICAL SCIENCES

June 8 - 10, 2000

The Faculty of Pharmacy would like to announce the CSPS conference, "Technology Transfer: From Bench to Market," happening in Vancouver, BC. Please check the conference Web site for details at: www.pharmacy.ualberta.ca/CSPSConferenceSite/

CANADIAN INDIGENOUS/NATIVE STUDIES ASSOCIATION ANNUAL CONFERENCE

May 28 - 31, 2000

Hosted by the School of Native Studies at the University of Alberta. Please contact Program Chair/Local Coordinator, Wendy Aasen, at 492-2991 for information.

INTERNATIONAL NORTHWESTERN CONFERENCE ON DISEASES IN NATURE COMMUNICABLE TO MEN (INCDNCM)

July 30 - August 2, 2000

The 55th annual INCDNCM takes place at Colorado State University, Fort Collins, Colorado. Program scope: viral, Rickettsial, bacterial, parasitic or prion-related diseases acquired from natural sources, in-

cluding animals (wild or domestic), contaminated water or food supplies, arthropod vectors, etc. For more information: Errol Prasad, Clinical Virologist, phone 407-8975 or e-mail esp@bugs.ualberta.ca.

EXHIBITION

EXTENSION GALLERY

until April 20

Fine Arts Students Show 2000. Featuring students' works for the current year. Gallery hours: Monday - Thursday, 8:30 am - 8:00 pm; Friday, 8:30 am - 4:30 pm, Saturday, 9:00 am - 12:00 noon. Second floor, University Extension Centre, 8303 - 112 Street. Info: 492-3034.

GENERAL LEADERSHIP AND MANAGEMENT PROGRAMS

BANFF CENTRE FOR MANAGEMENT

April 30 - May 6

"Leadership Challenge."

May 7 - 13

"Team Leadership and Facilitation."

September 10 - 15, 2000

"Enhancing Personal and Professional Effectiveness."

September 12 - 22

"Management Excellence."

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MUSIC

DEPARTMENT OF MUSIC

April 14, 8:00 pm

Master of Music recital: Barbara Sadler Wells, soprano. Robertson-Wesley United Church, 10209 - 123 Street. Free admission.

April 17, 8:00 pm

Master of Music recital: Leonor Rondeau, piano. Free admission. Convocation Hall, Arts Building.

April 20, 8:00 pm

Master of Music recital: Julie Golosky, mezzo-soprano. Free admission. Convocation Hall, Arts Building.

April 25, 8:00 pm

Trombone Celebration featuring Christopher Taylor, John McPherson and students. Free admission. Convocation Hall, Arts Building.

May 14, 8:00 pm

Faculty recital: Scott Whetham, tuba, "Music for Tuba." Program includes works by Vinter, Hindemith, Forsyth, Whetham (chamber ensemble). Admission: \$5/student/senior, \$10/adult. Convocation Hall, Arts Building.

THEATRE

STUDIO THEATRE

May 17 - 27

Arthur Miller's "A View from the Bridge."

Karen Towsley, MFA Directing candidate. Box Office: 492-2495. Timms Centre for the Arts.

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Guess where Editor Lucianna Cicciocrippo took her Folio edition recently and you could win a copy of *Threshold: An Anthology of Contemporary Writing from Alberta*, courtesy of University of Alberta Press—that's if you can guess the city and country correctly. Get the country right and you win a funky-but-functional Workplace Wellness golf shirt.

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Fill out the form below and forward to 405 Athabasca Hall by April 25 for your chance to win. And don't hesitate to snap a photo of yourself reading Folio when away—we'd be happy to see how far Folio travels. The best photos will be published, and we'll keep digging for prizes to give away.

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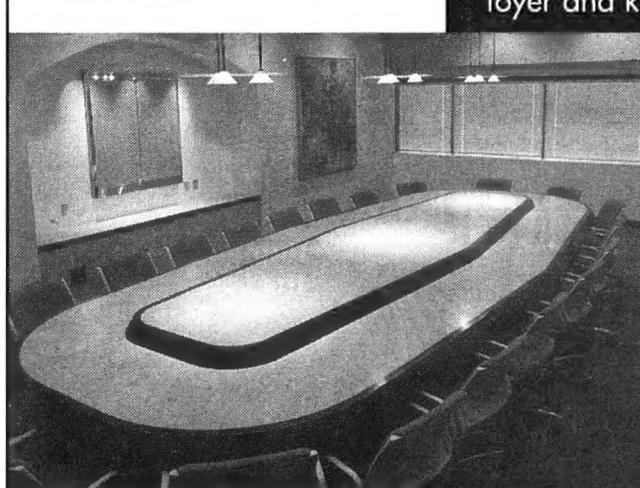
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This position will be of interest to highly motivated, enthusiastic and energetic individuals who possess excellent leadership, organizational, analytical and communication skills, and who are recognized for their ability to work positively and effectively with individuals and groups, both in the diverse university community and externally.

Qualified applicants will have a university degree and several years of related experience. Proficiency in a Windows computer environment (MSWord, Excel and Access) and in university PeopleSoft (EPIC, PISCES and OASIS), as well as familiarity with academic, financial and human resources policies and procedures are essential. Administrative experience related to teaching and research programs that involve lab facilities, collections, travel and field work is highly desirable.

This position has a salary range from \$37,649 to \$56,477 (under review), commensurate with qualifications and experience. Application deadline is May 1, 2000.

Letters of application, including a résumé and the names of three referees, should be sent in confidence to: Dr. Nancy Lovell, Chair, Department of Anthropology, University of Alberta, 13-15 Tory Building, University of Alberta, Edmonton, AB T6G 2H4

RESEARCH ASSOCIATE – PART-TIME DEPARTMENT OF BIOLOGICAL SCIENCES

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Ideal candidates will demonstrate professional competence in areas related to recruitment and selection, and they will combine a client-focused approach with proven excellence in coaching, communication, and interpersonal skills. A commitment to the Human Resource profession will be evident by membership in relevant organizations and professional designation (such as CHRP). Proficiency with MS Word, Excel, email and familiarity with database systems is expected.

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Candidates are asked to submit a résumé no later than April 28, 2000 to: Cynthia Caskey, Employment Unit, Employee Relations & Employment Services, 2-40 Assiniboia Hall, University of Alberta, Edmonton, Alberta T6G 2E7

CONTENT COORDINATOR, CANADIAN HEALTH NETWORK (CHN)

"ACTIVE LIVING PROJECT"

ALBERTA CENTRE FOR WELL-BEING

The CHN aims to help Canadians make more informed and better decisions about their health through easy Internet access to reliable, relevant, credible health information. CHN is a nationally funded bilingual network of existing Internet-based health information. Reporting to the CHN active living project coordinator, the content coordinator will be responsible for the content presented on the CHN Active Living Project Web site, including collection and development of resources and information. The preferred location for this position is at the University of Alberta.

Responsibilities include reviewing existing site content, making recommendations for change, conducting gap analyses (i.e. identifying gaps or lack of information), developing new information products, and identifying new information sources (ie, if and when gaps are identified). The content coordinator will also respond to all Active Living Project information requests or forward these requests to relevant associates.

Qualified applicants will possess a master's degree in physical education or equivalent; physical activity knowledge and experience; certification in fitness leadership or instruction preferred; medium to high proficiency using the Internet and Microsoft Office; French language and writing skills preferred. The successful candidate should also have excellent written and oral communication and strong interpersonal and organization skills. Experience in and knowledge of the active living community/network in Canada is desirable.

This is a full-time, trust support position for a three-year term with the possibility for renewal. The salary range is \$32,616 - \$41,377 per annum. A Letter of application, résumé and the names of three referees should be forwarded to: Human Resources, Alberta Centre for Well-Being, Percy Page Centre, 3rd Floor, 11759 Groat Road, Edmonton, AB T5M 3K6 or email: gloria.klinge@ualberta.ca no later than May 3, 2000. All applicants are thanked for their interest; however, only short-listed candidates will be contacted.

PROJECT COORDINATOR, CANADIAN HEALTH NETWORK (CHN)

"ACTIVE LIVING PROJECT"

ALBERTA CENTRE FOR WELL-BEING

The CHN aims to help Canadians make more informed and better decisions about their health through easy Internet access to reliable, relevant, credible health information. CHN is a nationally funded bilingual network of existing Internet-based health information. Reporting to the director of the Alberta Centre for Well-Being, the project coordinator will have the overall responsibility for the Canadian Health Network (CHN) Active Living Project. The position will be located at the University of Alberta in Edmonton.

Responsibilities include developing and supporting a diverse network of associates in the active living area, supporting associates in reviewing and recommending appropriate active living content, and facilitating regular communication and partnership development with associates. Along with networking responsibilities, the project coordinator will oversee all evaluations of the Active Living Project Web site; administer and manage the project budget; prepare project reports and proposals; and manage the work of both the content coordinator and information specialist.

Qualified applicants will possess a master's degree in health administration, physical education, or equivalent; project management experience including administration; medium to high proficiency using the Internet and Microsoft Office; French language and writing skills preferred. The successful candidate should also have excellent written and oral communication and strong interpersonal and organization skills. Experience in and knowledge of the active living community/network in Canada is desirable.

This is a full-time trust, three-year contract position with the possibility for renewal. Salary range is \$36,000 - \$52,000 per annum. A letter of application, résumé, and the names of three referees should be forwarded to: Human Resources, Alberta Centre for Well-Being, Percy Page Centre, 3rd Floor, 11759 Groat Road, Edmonton, AB T5M 3K6 or email: gloria.klinge@ualberta.ca no later than April 26, 2000.



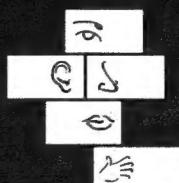
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Tina Chang

Lynne Sigler's collection includes a new genus of fungi that causes nail infections in older patients.

University of Alberta Microfungus Collection and Herbarium is home to medical breakthroughs

By Vivian Zenari

The workspace looks innocuous enough. Tucked away between a greenhouse and the staff parking lot at the Devonian Botanic Garden south of Edmonton, it consists of a lab and small storage and workrooms, the largest of which is crammed with racks of brown and grey filing cabinets.

Then the host points out the darkroom and the canisters of liquid nitrogen. You now suspect the refrigerator isn't being used to store lunches. Your suspicion this is no ordinary office is confirmed when you see what's inside the filing cabinets: tiny packets of dried mould.

The University of Alberta Microfungus Collection and Herbarium (UAMH) is the eighth-largest collection of filamentous fungi in the world. It has 9,700 living strains of yeasts, moulds and mushrooms. Its collection focuses on fungi associated with human and animal diseases, as well as those that grow on plants or live in symbiosis with them.

Living strains, which are freeze-dried or frozen in liquid nitrogen for preservation, are the preferred source for researchers, since genetic material can easily be extracted. The collection also keeps photographs, slides and a "herbarium" of dried specimens for verification and teaching. It's much easier to get a dried fungus across the border than a living one, says curator Lynne Sigler.

Sigler and her staff have made significant contributions to medical microbiology and diagnostic medicine. In 1990 Sigler discovered *Onychococha canadensis*, a new genus of fungi that causes nail infections in older patients. Subsequent to her work, scientists in other countries have been able to identify the same fungus. Sigler's collection now has more than 30 samples of it.

UAMH has also collaborated in numerous medical diagnoses of sick and dying people. In one case, UAMH received a fungus sample from Saudi Arabia, taken from a teenaged female cancer patient who had developed a brain abscess. Sigler was able to identify the extraction and show the same fungus had caused brain infections in two dogs in Oklahoma. The Saudi Arabian girl is still alive.

UAMH got its start in 1933 when Dr. E. Silver Dowding established a diagnostic service for human fungal diseases. Sigler joined UAMH as an undergraduate in 1969 under Dr. Bill Carmichael, a leader in the field.

"I fell into this collection at an early age and I'm still here. I was fortunate to find an exciting position in which I could grow and that matched my interests and abilities."

As well as her curatorial responsibilities, she teaches in the Department of

Medical Microbiology and Immunology and is affiliated with the agricultural, food and nutritional science and biological sciences departments.

Sigler likens the UAMH to a library. Most activities revolve around classifying, cataloguing and storing the microfungi. Researchers can access the collection through its catalogue online and they can even "check out" material. In 1999 UAMH pro-

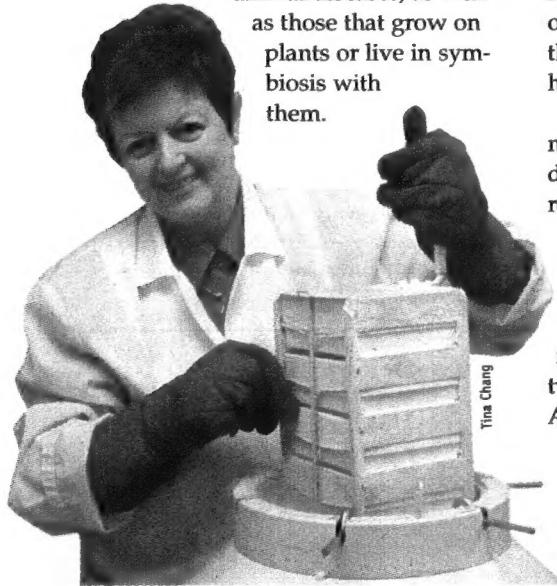
vided nearly 600 samples of living organisms, most of which went to outside institutions. Scientists and researchers at the U of A and around the world in pharma-

cy, biology, medicine, chemistry, engineering, agriculture and forestry use its resources.

UAMH is a busy place. Sigler's staff of three must manage all of its highly specialized, labour-intensive workload. They also field innumerable inquiries from the public, answering questions on air quality and—particularly in the spring—allergenic moulds. In addition to these duties, Sigler and her associates are prolific writers, conference presenters and workshop instructors.

"You never know what you're going to be doing next," says Sigler. "It's such a diverse job." Diverse, challenging—and rewarding.

There aren't very many places like it, where in an astonishingly unassuming way, people make contributions to saving lives everyday. ■



Arlene Flis taking samples from cryofreezer.

folio back page